

Subject Area: Advanced Methods in Biotechnology and Biodiversity

Subject: Patch Clamp Studies in Plant Cell

Level: PhD

Year: I-IV

Semester: 1-2

Speciality: N/A

Status: Facultative

ECTS: 3

Department(s): Plant Physiology

Cooperating Department:

Form of teaching (Number of hours; Form of assessment: Credit

<i>Lectures</i>	<i>Seminars/Conversatoria</i>	<i>Practicals</i>	<i>Total</i>
4h		26h	30h

Staff:

SUBJECT COORDINATOR: Prof. Waldemar Karcz PhD

LECTURE/CONVERSATORIA: Prof. Waldemar Karcz PhD

PRACTICALS: Zbigniew Burdach PhD, Eugeniusz. Małkowski PhD

Contents:

LECTURES:

Concepts and techniques in plant membrane physiology; Transport of solutes across a membrane barrier; Membrane transport proteins; Structure function and regulation of primary pumps; voltage-gated ion channels; ligand-gated ion channels; aquaporins in plants; membrane transport and soil bioremediation

PRACTICALS:

Patch-clamp recording configurations; making patch pipettes; building a patch-clamp set-up; preparation of cells and tissues for patch-clamp recording; the measurement of the function of ion channels; concepts of single-channel analysis

Methods and forms of teaching: teaching in patch-clamp laboratory

Requirements: knowledge of molecular biology

Literature

1. Ion channels. Ed. By R.H. Ashley. Oxford Un. Press, 1995
2. Membrane transport in plants. Ed. By M.R. Blatt. Blackwell Pub. CRC press, 2004
3. Ionic channels of excitable membranes. Bertil Hille. Sinauer Ass. Inc., 1992
4. Plant Physiology. Taiz Zeiger. Sinauer Ass. Inc., 1998